

Madeline Gillet

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Title: *Perils across the Sagebrush Landscape*

Medium: Graphite pencil on paper

My research in the SUPER program focused on the impacts of fuel breaks and soil moisture on annual grass invasion in the sagebrush biome. After writing a report and creating a research poster, I wanted to bring a new perspective to this research by representing the problem being addressed visually and creatively. Often, scientific research feels quite structured and sequential, and for those of us who conceptualize problems in a way that is more systematic and focused on the big-picture, visual art is necessary and powerful. Even for a beginner such as myself, drawing is an effective medium through which to explore science.

In this piece, I intended to show each step of the human-fire-grass cycle (Fusco et al., 2021) in one image so that anyone could easily understand the perils facing sagebrush ecosystems across the western United States. First, wildfires spread across the landscape destroying vegetation, including perennial grasses and shrubs, and disturbing the soil. Because native vegetation is not adapted to the increasing frequency of the fire regime in recent decades (as temperatures increase and areas become drier), it takes a long time to recover. Here, nonnative annual grasses such as cheatgrass have the perfect opportunity to take over the landscape because they can establish more quickly and with fewer resources than native perennial grasses. Once this transformation takes place, it is difficult and expensive to restore the ecosystems to their natural state. Fuel breaks - interruptions in the landscape intended to stop the spread of fires - are a potential management tool for preventing the loss of native vegetation in the first place. In the piece, one can see a healthy sagebrush ecosystem and an invaded sagebrush ecosystem, and all that each entails, separated by a fuel break.

References

- Fusco, E. J., Balch, J. K., Mahood, A. L., Nagy, R. C., Syphard, A. D., & Bradley, B. A. (2021). The human–grass–fire cycle: how people and invasives co-occur to drive fire regimes. *Frontiers in Ecology and the Environment*, 20(2), 117–126.
<https://doi.org/10.1002/fee.2432>